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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte EMCON TECHNOLOGIES LLC

Appeal 2011-005926
Application 10/775,033
Technology Center 3700

Before JAMESON LEE, SALLY C. MEDLEY, and
MICHAEL P. TIERNEY, *Administrative Patent Judges*.

LEE, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal by EMCON TECHNOLOGIES LLC (“Emcon”), under 35 U.S.C. § 134(a) from a final rejection of claims 1, 3-7, 9, 11-17, 19-22, and 24-32 of Application 10/775,033. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

STATEMENT OF THE CASE

Emcon's application was the subject of a previous appeal before the Board – Appeal 2009-003657. We reversed all rejections then on appeal.

The Invention

The disclosed invention is related to exhaust pipe valves, such as one used in automotive emission control application. (Spec. ¶ 3). Typically in an emission control system, there is an exhaust gas duct in which a heat exchanger is arranged to capture heat for use in heating the interior of a vehicle, and a bypass duct. (Spec. ¶ 4). The inventors state that preexisting valves used to control gas flow through the ducts suffer from two main problems: (1) the valves must withstand high operating temperatures for a lifetime of 10 to 15 years; and (2) the valves must prevent any leakage of exhaust because they are typically deployed upstream of a catalytic converter, where the exhaust has not yet been purified. (Spec. ¶ 9).

The exhaust pipe valve invention includes a housing, a bearing sleeve in the housing and having a primary bearing surface, a valve spindle rotatably mounted in the bearing sleeve and having a primary sealing surface that is in direct abutting engagement with the primary bearing surface of the bearing sleeve, and other components including a valve plate, a washer, and a spring that biases the primary sealing surface of the valve spindle against the primary bearing surface of the bearing sleeve while biasing the washer against the bearing sleeve. (Spec. ¶ 11).

Claim 1 is the only independent claim on appeal and reads as follows:

1. An exhaust pipe valve, comprising:

a housing including a cylindrical portion defining a bore;

a bearing sleeve comprising a cylindrical body mounted within the bore and completely surrounded by the housing and having a primary bearing surface;

a valve spindle rotatably mounted in the bearing sleeve and having a primary sealing surface that is in direct abutting engagement with the primary bearing surface of the bearing sleeve;

a valve plate mounted at the valve spindle, wherein the primary bearing surface of the bearing sleeve faces the valve plate;

a washer arranged on the valve spindle, wherein the washer cooperates with the bearing sleeve on a side of the bearing sleeve that faces away from the valve plate, the side of the bearing sleeve that faces away from the valve plate being a secondary bearing surface, and wherein the washer has a secondary sealing surface that cooperates with the secondary bearing surface; and

a spring that biases the primary sealing surface of the valve spindle against the primary bearing surface of the bearing sleeve while biasing the washer against the bearing sleeve.
(Emphasis added.)

According to the inventors, the “inventive valve” has a simple construction, and improves longevity and reliability, noting that the bearing sleeve acts both as a seal against leakage of exhaust gas towards the exterior and as a bearing in which the valve spindle is rotatably mounted. (Spec. ¶ 15).

Reference Relied on by the Examiner

Cook	Patent 5,401,001	March 28, 1995
Fodor	Patent 5,496,142	March 5, 1996
Ong	Patent 5,645,900	July 8, 1997
Bartz	Patent 1,911,787	May 30, 1933

Thauer	Patent 3,693,935	September 26, 1972
Kuramoto	Patent 4,231,341	November 4, 1980
Hester	Patent 3,916,943	November 4, 1975

The Rejections on Appeal

Claims 1, 5, 9, 11-17, 26-29, 31 and 32 were finally rejected by the Examiner under 35 U.S.C. § 102 as anticipated by Cook.

Claims 11 and 12 were finally rejected by the Examiner under 35 U.S.C. § 103 as unpatentable for obviousness over Cook.

Claims 6 and 7 were finally rejected by the Examiner under 35 U.S.C. § 103 as unpatentable for obviousness over Cook and Fodor.

Claims 19-22 were finally rejected by the Examiner under 35 U.S.C. § 103 as unpatentable over Cook and Ong.

Claims 24 and 25 were finally rejected by the Examiner under 35 U.S.C. § 103 as unpatentable over Cook and Bartz.

Claims 1, 3-5, 11-16, 24-28, and 31-32 were finally rejected by the Examiner under 35 U.S.C. § 103 as unpatentable over Thauer and Kuramoto.

Claims 9 and 17 were finally rejected by the Examiner under 35 U.S.C. § 103 as unpatentable over Thauer, Kuramoto and Cook.

Claims 6 and 7 were finally rejected by the Examiner under 35 U.S.C. § 103 as unpatentable over Thauer, Kuramoto, and Fodor.

Claims 19-22 were finally rejected by the Examiner under 35 U.S.C. § 103 as unpatentable over Thauer, Kuramoto, and Ong.

Claims 29 and 30 were finally rejected by the Examiner under 35 U.S.C. § 103 as unpatentable over Thauer, Kuramoto, and Hester.

DISCUSSION

A. The Rejection of Claims 1, 5, 9, 11-17,
26-29, 31, and 32 as Anticipated by Cook

Anticipation is established only when a single prior art reference discloses, either expressly or under the principles of inherency, each and every element of the claimed invention. *In re Spada*, 911 F.2d 705, 708 (Fed. Cir. 1990). Moreover, each element must be found in the reference exactly as it is recited in the claim. *Karsten Manufacturing Corp. v. Cleveland Golf Co.*, 242 F.3d 1376, 1383 (Fed. Cir. 2001).

In proceedings before the U.S. Patent and Trademark Office, claims are properly construed according to their broadest reasonable interpretation consistent with the specification. *In re Zletz*, 893 F.2d 319, 321 (Fed. Cir. 1989); *In re Prater*, 415 F.2d 1393, 1404 (CCPA 1969). The key is in determining what is reasonable in the context of the specification.

Hereinafter, we focus only on the disputed limitations.

It is an expressly recited feature of claim 1 that a sealing surface of the valve spindle is “in direct abutting engagement” with the bearing surface of the bearing sleeve. It means, at a bare minimum, that no separate third element should provide the connecting engagement between the valve spindle and the bearing sleeve. Emcon’s Figure 3 is reproduced below, which shows an exploded view of a preferred embodiment of the valve spindle and bearing sleeve combination:

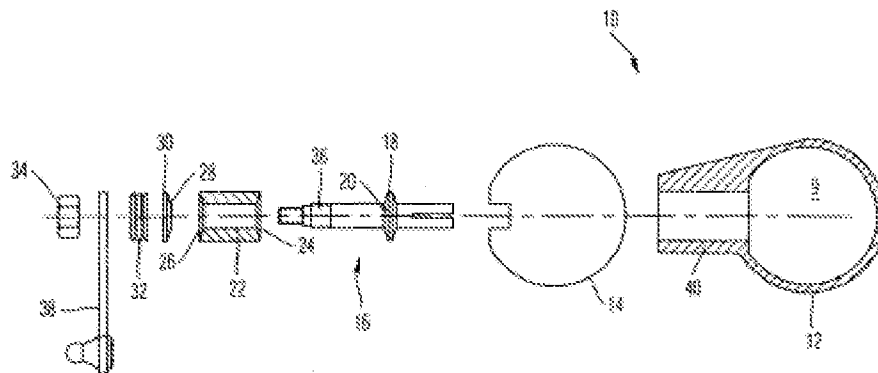


Fig. 3

The valve spindle is referenced by numeral 16 and the bearing sleeve is referenced by numeral 22. Numeral 18 designates an integrally formed shoulder of the valve spindle 16. With regard to the contact between the valve spindle and the bearing sleeve illustrated in Figure 3, the specification states, *inter alia* (Spec. ¶ 33-34):

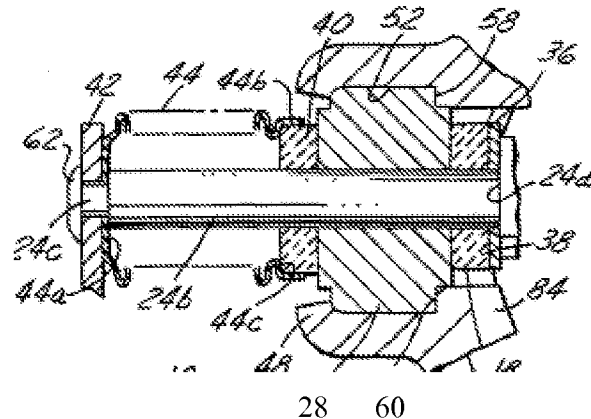
The valve spindle 16 comprises a radial shoulder 18 formed integrally with the valve spindle 16. The shoulder 18 has a conical sealing surface 20 on the side facing away from valve plate 14.

The valve spindle 16 is rotatably mounted within a bearing sleeve 22 On its [out]side facing shoulder 18, the bearing sleeve 22 has a conical bearing surface 24. The inclination of the bearing surface 24 corresponds to the inclination of the sealing surface 20 [on the valve spindle]. In one embodiment, the bearing surface 24 and the sealing surface 20 form an angle of approximately 20° with a radially extending plane.

Figure 3 shows an example of how a sealing surface [20] on the valve spindle is in direct abutting engagement with bearing surface [24] on the

bearing sleeve as is recited in claim 1. Note also that washers 30 and 32 are also shown on the side opposite that of valve plate 14 with respect to shoulder 18 of the valve spindle, and the washers are not identified or referred to as any part of either the valve spindle or the bearing sleeve.

Cook discloses a gas exhaust control valve. Figure 8 of Cook shows a partial cross-sectional view of the valve and is reproduced below:



In Cook's Figure 8 shown above, valve spindle portion 24b extends through bearing 28 but is not in a sealing engagement with the bore of the bearing sleeve. In that connection, Cook states (Col. 4:16-21):

bearing 28 does not have a blind hole, but rather a through-hole through which shaft portion 24b extends. Thus, it is necessary to prevent escape of exhaust gases via the running clearance between the shaft O.D. and the bearing I.D. This is accomplished as follows.

Cook then describes that a surface-to-surface sealing engagement is made between a face of washer 38 and a face of bearing 28. (Col. 4:60-62).

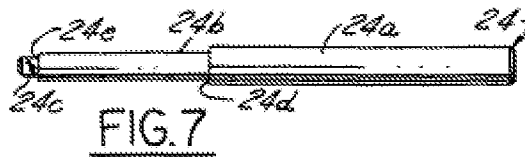
The Examiner determined that Cook discloses Emcon's claimed feature requiring that in a valve spindle rotatably mounted within a bearing sleeve, a sealing surface of the valve spindle is in direct abutting engagement

with the bearing surface of the bearing sleeve. Emcon challenges that finding. For reasons discussed below, the challenge has merit.

Cook's shaft portion 24b is a valve spindle rotatably mounted within bearing sleeve 28. The Examiner regards the washer 38 through which the shaft portion extends as a part of the valve spindle. (Answer 3:21 to 4:1). In the context of Emcon's specification, that position is unreasonable.

Where a claim requires direct abutting contact between two elements, care must be exercised to not consider an intermediately disposed part as a component of one or the other unless there is good reason to do so. We must pay due respect to the limitation and not effectively read it out of the claim. There must be a rational basis for regarding the intermediately disposed part as a component of one of the two elements required to be in direct abutting contact with each other. Here, the Examiner articulated no reasonable basis to regard Cook's washer 38 as a component part of shaft portion 24b extending therethrough.

The Examiner pointed to no persuasive evidence that one with ordinary skill in the art reasonably considers a washer through which a shaft extends as a component part of the shaft. We note further that Emcon's own specification discusses washers 30 and 32, shown in Figure 3, through which the valve spindle extends, and does not refer to them as a component part of the valve spindle. (Spec. ¶¶ 36-37). Cook also does not refer to its washer 38 as a component part of the shaft. Cook illustrates its shaft 24 in Figure 7 which is reproduced below and does not include any washer:



The Examiner asserts that elements 24, 36, and 38 collectively function as a valve spindle because they rotatably mount the valve blade and seal the journal bearing 28 against fluid leakage. The contention is misplaced. Even assuming the Examiner's assertion is true, that does not render washers 36 and 38 component parts of any valve spindle. The record does not support a conclusion that whatever provides the sealing with the bearing must be considered a part of the valve spindle.

The Examiner refers to the last sentence of Paragraph 12 of Emcon's specification, which states: "The sealing surface may be formed on a radially projecting shoulder formed integrally with the valve spindle." According to the Examiner, that means the specification indicates the sealing surface may alternatively be formed with a multi-piece valve spindle. We disagree. That assertion is without reasonable support. The alternative structure is already described previously in the same paragraph of the disclosure, and it is that the sealing surface is formed on a washer.

Paragraph 12 of Emcon's specification begins with the following sentence:

In one embodiment, a secondary bearing surface is formed on the side of the bearing sleeve facing away from the valve plate, and a secondary sealing surface is formed on the washer to cooperate with the secondary bearing surface.

That is insufficient basis to regard a washer through which the valve spindle extends as a component part of the valve spindle. The Examiner's view that Cook discloses a multi-piece spindle including the washer 38 is unreasonable in the context of Emcon's specification.

In the alternative, the Examiner asserts that Cook's washers 36 and 38 can fairly be read as a part of the bearing 28. (Answer 9:19-21). We disagree. For reasons similar to those already discussed above, the assertion is at best no more reasonable than regarding the washers as component parts of the valve spindle. The Examiner pointed to no persuasive evidence that one with ordinary skill in the art reasonably considers a washer which is simply positioned next to and compressed against a bearing as a component part of the bearing. We note further that Emcon's own specification discusses washers 30 and 32, shown in Figure 3, through which the valve spindle extends, and does not refer to them as a component part of the bearing 22. (Spec. ¶¶ 36-37). Cook also does not refer to its washers 36 and 38 as a component part of the bearing 28.

For the foregoing reasons, the rejection of claims 1, 5, 9, 11-17, 26-29, 31, and 32 under 35 U.S.C. § 102 as anticipated by Cook cannot be sustained.

B. The Rejection of Claims 11
and 12 as Obvious over Cook

Claims 11 and 12 each depend from claim 1. Claim 11 adds the limitation that the valve plate is mounted centrically at the valve spindle and cooperates with the inner wall of the housing. Claim 12 adds the limitation that the valve plate is mounted eccentrically at the valve spindle and cooperates with two valve seats in an interior of the housing.

The Examiner's rationale in support of this obviousness rejection does not make up for the deficiencies noted above in the discussion of the rejection of claim 1 as anticipated by Cook.

Accordingly, the rejection of claims 11 and 12 under 35 U.S.C. § 103 as unpatentable over Cook cannot be sustained.

C. The Rejection of Claims 6 and
7 as Obvious over Cook and Fodor

Claim 6 depends on claim 5 which depends on claim 1. Claim 7 depends on claim 1. Claim 6 adds the limitation that the spring is a spring washer. Claim 7 adds the limitation that the spring is made from a nickel-chromium-iron alloy.

The Examiner's rationale in support of this obviousness rejection does not make up for the deficiencies noted above in the discussion of the rejection of claim 1 as anticipated by Cook.

Accordingly, the rejection of claims 6 and 7 under 35 U.S.C. § 103 as unpatentable over Cook and Fodor cannot be sustained.

D. The Rejection of Claims 19-22
as Obvious over Cook and Ong

Claim 19 depends on claim 1. Claims 20 and 22 each depend on claim 19. Claim 21 depends on claim 20.

The Examiner's rationale in support of this obviousness rejection does not make up for the deficiencies noted above in the discussion of the rejection of claim 1 as anticipated by Cook.

Accordingly, the rejection of claims 19-22 under 35 U.S.C. § 103 as unpatentable over Cook and Ong cannot be sustained.

E. The Rejection of Claims 24 and
25 as Obvious over Cook and Bartz

Claims 24 and 25 each depend on claim 1.

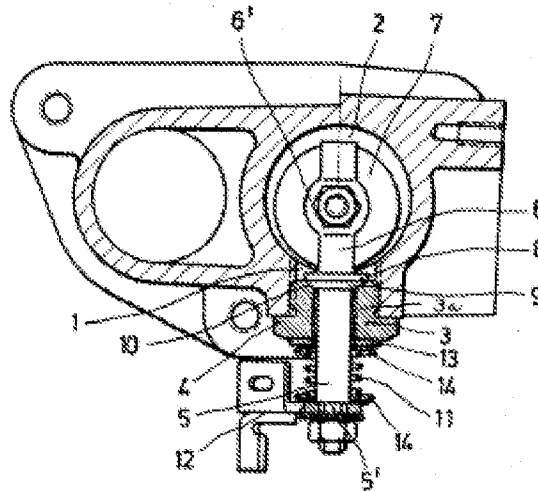
The Examiner's rationale in support of this obviousness rejection does not make up for the deficiencies noted above in the discussion of the rejection of claim 1 as anticipated by Cook.

Accordingly, the rejection of claims 24 and 25 under 35 U.S.C. § 103 as unpatentable over Cook and Bartz cannot be sustained.

F. The Rejection of Claims 1, 3-5, 11-16, 24-28, 31, and 32 as Obvious over Thauer and Kuramoto

Claim 1 is the only independent claim. It recites a housing including a cylindrical portion defining a bore and requires a bearing sleeve having a cylindrical body to be mounted within the bore and completely surrounded by the housing. It also recites a washer having a secondary sealing surface that cooperates with a secondary bearing surface on a side of the bearing sleeve facing away from the valve plate.

As is determined by the Examiner, Thauer fails to disclose a cylindrical bearing sleeve completely surrounded by the housing, and a washer having a sealing surface cooperating with a bearing surface. The sole figure of Thauer is reproduced below, which shows a cross-sectional view of an exhaust pipe including an improved valve:

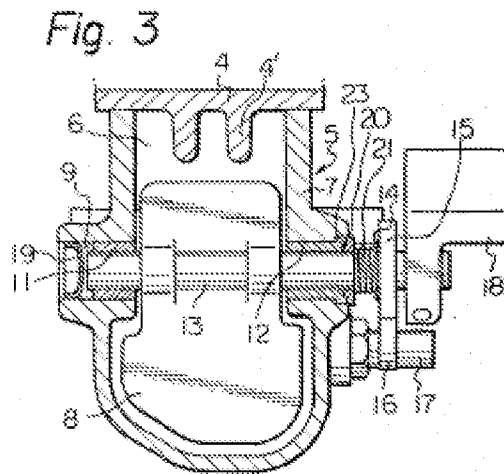


With regard to bearing 3, Thauer states (Col. 2:4-12):

an externally threaded, preferably cylindrical bearing 3 is operatively disposed in said bore and is accurately radially positioned by means of a radially projecting flange 4 at its outer end, the inwardly directed face or shoulder of which abuts against the preferably flat surface of the exhaust pipe structure surrounding the outer end of the bore 1 and preferably is in sealing relation therewith.

As described above, Thauer's cylindrical bearing 3 is not completely within the exhaust pipe housing but has a flange 4 protruding from the housing and in sealing engagement with the housing, which serves to accurately radially position the bearing. Thauer's illustrated pipe valve also does not include a washer on the side of bearing 3 which is away from the valve plate. Kuramoto, on the other hand, discloses an exhaust gas flow control valve which includes both of the features missing from Thauer.

Figure 3 of Kuramoto is reproduced below, which shows a cylindrical bearing 12 completely surrounded by the valve housing, and a washer 20 disposed on a side of the bearing facing away from the valve plate 8 and having a conical surface cooperating with a bearing surface of bearing 12:



The Examiner concluded that it would have been obvious to one with ordinary skill in the art to substitute the different bearing 12 of Kuramoto for the bearing 3 of Thauer and to include a washer 20 like that shown in Kuramoto in the pipe valve of Thauer. Emcon disputes that determination but for reasons discussed below, fails to establish error in that determination.

Emcon argues that because flange 4 on Thauer's bearing 3, positioned outside of the housing, is provided in Thauer for a beneficial purpose in radially centering the bearing, Thauer "teaches away" from adopting Kuramoto's cylindrical flange without a flange, which is placed entirely within the housing. The argument is misplaced and without merit.

It is true that the flange 4 on Thauer's bearing is configured outside of the housing and provided for the purpose of radially centering the bearing. However, the use of patents as references is not limited to what the patentees describe as their own inventions or to the problems with which they are concerned, as they are a part of the literature and are relevant for all they contain. *In re Heck*, 699 F.2d 1331, 1333 (Fed. Cir. 1983); *In re Lemelson*, 397 F.2d 1006, 1009 (CCPA 1968). The teaching value of a prior art reference to one with ordinary skill in the art is not limited to the particular

invention the prior art reference is describing and attempting to protect.

EWP Corp. v. Reliance Universal Inc., 755 F.2d 898, 907 (Fed. Cir.), cert. denied, 474 U.S. 843 (1985). Thus, Thauer's particular way of centering the bearing by use of a flange that protrudes from the housing is not sacrosanct and need not be preserved in an analysis of what would have been obvious to one with ordinary skill in the art.

The question is what would have been obvious to one with ordinary skill in the art viewing the two prior art references together with no preconceived notions of what features must be preserved. It is not a requirement in patent law that an obvious combination must include all of the beneficial features of each base reference. One with ordinary skill in the art has ordinary creativity and is not an automaton. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007). We reject Emcon's rigid and inflexible suggestion that every beneficial feature of a prior art reference must be maintained and implemented in a combination including that reference.

Thauer discloses one type of bearing sleeve, a type which protrudes from the pipe valve housing. Kuramoto discloses a different type of bearing sleeve, a type which is completely surrounded by the pipe valve housing. The Examiner's rationale is reasonable that it would have been obvious to one with ordinary skill in the art to substitute one for the other, in this case the completely internal bearing sleeve of Kuramoto for the protruding one of Thauer. Emcon's contention that the disclosure of one type of bearing sleeve is a "teaching away" from the use of the other is misdirected.

A reference "teaches away" from a feature when the reference indicates that the feature is unlikely to produce the objective intended by the applicant through use of that feature. *See Syntex (U.S.A.) LLC v. Apotex*,

Inc., 407 F.3d 1371, 1380 (Fed. Cir. 2005); *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994). Thauer nowhere indicates that an alternative bearing sleeve surrounded completely by the pipe valve housing would be inoperative insofar as centering the bearing sleeve is concerned. Not saying anything is not the same as a teaching away. *See Para-Ordnance Mfg, Inc. v. SGS Importers Int'l, Inc.*, 73 F.3d 1085, 1090 (Fed. Cir. 1995). Emcon also has submitted no objective evidence in the form of declaration evidence to support a contention that one with ordinary skill would not have known how to properly center a bearing in an exhaust pipe valve if it includes a bearing sleeve which is surrounded completely by the pipe valve housing and is without the flange 4 of Thauer. Mere argument of counsel does not take the place of evidence lacking in the record. *Meitzner v. Mindick*, 549 F.2d 775, 782 (CCPA 1977). Moreover, Kuramoto itself is direct evidence to the contrary, as it speaks of no centering problem and relies on ordinary skill to do the necessary implementation.

With respect to the washer on the opposing side of the bearing with respect to the valve plate, the Examiner reasonably determined that because Kuramoto discloses such a washer it would have been obvious to one with ordinary skill to include the same in Thauer like in the case of the bearing.

Emcon argues that there would be no need to include such an additional washer with a sealing surface in Thauer on the side of the bearing which faces away from the valve plate because Thauer already includes a sealing collar on the side of the bearing proximate to the valve plate. The argument is misplaced. As is explained by the Examiner (Answer 12:17), “redundancy does not preclude obviousness.” One with ordinary skill in the

art would have known that redundancy provides insurance against failure and would be beneficial in that regard.

Also, one with ordinary skill in the art would have known not to expect a perfect seal in any one sealing engagement. Thus, a second seal on the opposite end of the bearing would not be totally redundant. In that regard, we note that Emcon has not provided any declaration testimony to the effect that one with ordinary skill in the art would expect Thauer's first seal to be a perfect seal and thus any second seal on the side opposing the valve plate to be entirely redundant. Mere argument of counsel does not take the place of evidence lacking in the record. *Meitzner v. Mindick*, 549 F.2d at 782; *see also In re Pearson*, 494 F.2d 1399, 1405 (CCPA 1974).

Emcon further notes that the first seal provided by Thauer's collar or shoulder 8 requires a clearance between the shaft 5 and the borders of the bore, while the second seal to be added on the basis of Kuramoto requires a sealing interface between the washer and the shaft. (Brief 13:12). On that basis, Emcon argues (Brief 13:12-15):

Sealing this collar [8] on the shaft 5 of Thauer would not provide the adequate clearance as required by Thauer. Thus, Thauer teaches away from the proposed modification. Further, such a modification would render Thauer unsatisfactory for its intended purpose and would change the principle of operation of Thauer.

The above-quoted argument is misdirected, as the Examiner has not proposed to eliminate the spacing provided by the collar or shoulder 8 of Thauer. Adding the washer to the end of the bearing 3 facing away from the valve plate provides a sealing end-plug on the bearing sleeve much like it is shown in Figure 3 of Kuramoto and does not present a conflict with the

space produced by the collar or shoulder 8 on shaft 5 between the shaft and the borders of the bore 3a. Emcon has provided no declaration testimony from any technical witness to support the assertion that adding a sealing washer at the opposing end of bearing 3 in Thauer would require elimination of the axial spacing within the bearing 3 that is provided by collar or shoulder 8 on shaft 5. Again, mere argument of counsel does not take the place of evidence lacking in the record. *Meitzner v. Mindick*, 549 F.2d at 782. In any event, we note the presence of washer 14 on Thauer's shaft 5, which coexists with the spacing provided by collar 8 without conflict.

Finally, Emcon argues that the Examiner incorrectly determined that Kuramoto discloses the use of both an inner seal on the side towards the valve plate and an outer seal on the side facing away from the valve plate. Emcon notes that neither Thauer nor Kuramoto discloses a seal at both ends of the bearing. The argument is misplaced. One cannot show non-obviousness by attacking references individually where the rejection is based on a combination of references. *In re Keller*, 642 F.2d 413, 426 (CCPA 1981). Thauer discloses an inner seal on the side facing the valve plate as claimed and Kuramoto discloses an outer seal on the side facing away from the valve plate as claimed. The use of one does not necessitate the exclusion of the other. One with ordinary skill in the art has ordinary creativity and is not an automaton. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. at 421. In light of Thauer and Kuramoto, one with ordinary skill in the art would have known to incorporate both an inner seal and an outer seal.

Emcon separately argues the merits of claim 26 which depends on claim 1. Claim 26 recites that the sealing surface of the washer is in direct

abutting engagement with the bearing sleeve such that the bearing sleeve is sandwiched directly between the washer and the valve spindle.

Emcon argues that neither Thauer nor Kuramoto discloses a bearing sleeve that is directly sandwiched between a spindle and a washer as claimed. The argument is without merit. Kuramoto's bearing 12 is directly sandwiched between washer 20 and spindle 13, the same way Emcon's bearing 22 is sandwiched directly between washer 30 and spindle 16. Compare Kuramoto's Figure 3 with Figure 3 of Emcon's own specification. The matching correspondence is unmistakable.

Emcon further argues that Thauer does not disclose such a washer and therefore teaches against such an arrangement. The argument is misplaced. In the Examiner's stated rationale, it is Kuramoto's bearing sleeve and associated washer which are adopted for use and not the particular bearing sleeve of Thauer. One cannot show non-obviousness by attacking references individually where the rejection is based on a combination of references. *In re Keller*, 642 F.2d at 426.

In any event, as is already explained above, Thauer is not a teaching away from the claimed combination simply on the basis that it discloses something else. Thauer nowhere indicates that the bearing/washer combination shown in Kuramoto would be inoperative or unworkable.

Emcon separately argues the merits of claim 31 which depends on claim 1. Claim 31 recites that the bearing sleeve is defined by an overall axial length extending from a first end face to a second end face, wherein the outer diameter of the bearing sleeve is generally constant from the first end face to the second end face.

Emcon argues that Thauer does not disclose such a bearing sleeve and teaches away from such a configuration because Thauer's bearing sleeve has an enlarged flange at one end. The argument is misplaced and rejected. In the Examiner's stated rationale, it is the bearing sleeve of Kuramoto that is relied on for the rejection and not that of Thauer. One cannot show non-obviousness by attacking references individually where the rejection is based on a combination of references. *In re Keller*, 642 F.2d at 426. Also, Thauer's disclosing a particular bearing with an enlarged end flange does not constitute a "teaching away" against all other types of bearings. Thauer nowhere indicates that a bearing with a generally constant outer diameter from one end face to another would be inoperative or unworkable.

Emcon separately argues the merits of claim 14 and 27, each of which depends from claim 1 and additionally recites that the bearing sleeve is received in the valve housing by press-fitting. The Examiner determined that Kuramoto's bearing 12 is press-fit into its bore. (Answer 6:13). That finding is not disputed by Emcon. Instead, Emcon argues that Thauer discloses not a press-fit bearing but a threaded bearing and that Thauer's threaded bearing is there for a useful purpose, *i.e.*, for easy installation by threading the bearing 3 into bore 1. Thus, according to Emcon, Thauer teaches away from using a press-fit bearing. The argument is misplaced.

In the Examiner's stated rationale, it is the bearing sleeve of Kuramoto that is relied on for the rejection and not that of Thauer. One cannot show non-obviousness by attacking references individually where the rejection is based on a combination of references. *In re Keller*, 642 F.2d at 426. Also, Thauer's disclosing a threaded bearing does not constitute a "teaching away" against press-fit bearings. Thauer nowhere indicates that a

press-fit bearing would be inoperative or unworkable. The advantages provided by a threaded bearing are not sacrosanct and need not be preserved in an obviousness analysis from the perspective of one with ordinary skill in the art. One with ordinary skill would have known that if a threaded bearing is used then it comes with the advantages provided by a threaded bearing and if a press-fit bearing is used then it comes with the advantages of a press-fit bearing. What is important is that both are selectable alternatives.

For the foregoing reasons, we affirm the rejection of claims 1, 3-5, 11-16, 24-28, and 31-32 under 35 U.S.C. § 103 as unpatentable over Thauer and Kuramoto.

G. The Rejection of Claims 9 and 17
as Obvious over Thauer, Kuramoto, and Cook

Both claims 9 and 17 depend on claim 1. Emcon does not separately argue the merits of claims 9 and 17 from that of claim 1 which was rejected as obvious over Thauer and Kuramoto.

We affirm the rejection of claims 9 and 17 under 35 U.S.C. § 103 as unpatentable over Thauer, Kuramoto, and Cook.

H. The Rejection of Claims 6 and 7
as Obvious over Thauer, Kuramoto, and Fodor

Both claims 6 and 7 depend directly or indirectly on claim 1. Emcon asserts that a spring such as that taught by Fodor would simply not work within the Thauer configuration because the spring of Fodor must be mounted within a recess formed in a mounting structure to prevent radial expansion of the washer. Mere argument of counsel does not take the place of evidence lacking in the record. *Meitzner v. Mindick*, 549 F.2d at 782. Emcon has submitted no declaration testimony to establish that one with

ordinary skill in the art would not have known how to operatively implement the combined configuration, or to establish that the spring washer must be confined as asserted to work. Fodor itself makes no such indication. We are not persuaded by Emcon's unsupported assertion.

We affirm the rejection of claims 6 and 7 under 35 U.S.C. § 103 as unpatentable over Thauer, Kuramoto, and Fodor.

I. The Rejection of Claims 19-22
as Obvious over Thauer, Kuramoto, and Ong

Claim 19 depends on claim 1. Claims 20 and 22 each depend on claim 19. Claim 21 depends on claim 20. Claim 19 further recites that a ceramic coating is disposed on at least a portion of one of the valve spindle and the washer.

As is correctly determined by the Examiner, Ong discloses the use of multiple protective coatings for "metal" substrates against harsh environments. (Ong, Abstract). One such protective coating is disclosed as Titanium Nitride (TiN) (Ong 4:66 to 5:2). Emcon does not dispute that Titanium Nitride, TiN, is a ceramic material. Other layers of the protective coating disclosed in Ong are formed of titanium-based hard amorphous substance. (Ong 4:31-35; 4:62-64).

Emcon argues that Ong does not disclose anything suggesting that a coating be applied to a valve spindle shaft or a bearing sleeve. That is incorrect. Ong's protective coating is for metal surfaces such as that on bearings and gears. (Ong 1:19-29). In any event, claim 19 refers to a protective coating on one of the valve spindle and the washer, and Emcon does not dispute that Kuramoto's washer 20 is made of metal, *e.g.*, stainless steel. See Kuramoto at column 2, lines 42-44.

Emcon does not separately argue the merits of claims 20-22 from that of claim 19.

We affirm the rejection of claims 19-22 under 35 U.S.C. § 103 as unpatentable over Thauer, Kuramoto, and Ong.

J. The Rejection of Claims 29 and 30
as Obvious over Thauer, Kuramoto, and Hester

Claim 29 depends on claim 1 and claim 30 depends on claim 29.

Claim 29 requires a primary sealing surface on a shoulder of the spindle be in direct abutting engagement with a primary bearing surface on one end face of the bearing sleeve and a secondary sealing surface on the washer be in direct abutting engagement with a secondary bearing surface on the opposing end face of the bearing sleeve. The Examiner found that these requirements are met by Thauer as modified by Kuramoto. That determination is not challenged by Emcon.

Claim 29 also requires that both the primary and secondary sealing engagements be within the bore of the housing, within which is mounted to the bearing sleeve. The Examiner determined that the requirement as directed to the secondary sealing engagement is met by Thauer as modified by Kuramoto. That determination is not challenged by Emcon.

According to the Examiner, however, the “within the bore” requirement as directed to the primary sealing engagement is not met by the combination of Thauer and Kuramoto, and thus for that feature the Examiner relied on Hester. (Answer 8:17-20). Emcon asserts that none of Hester, Thauer, and Kuramoto alone discloses a bearing with “both” primary and secondary sealing surfaces within the bore, but one cannot show non-

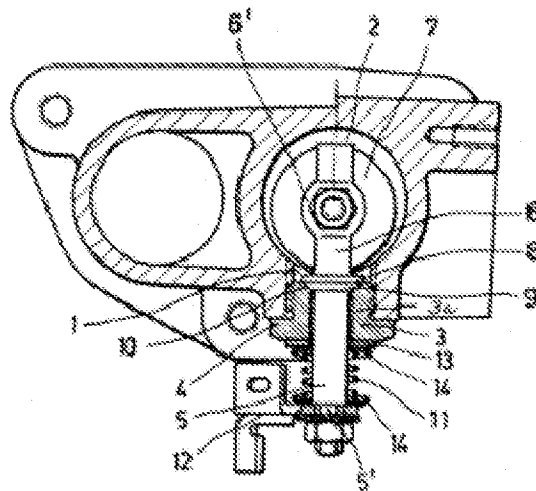
obviousness by attacking references individually where the rejection is based on a combination of references. *In re Keller*, 642 F.2d at 426.

A prior art reference is applicable as basis for a rejection if it is within the scope of “analogous art.” Two separate tests define the scope of analogous prior art: (1) whether the art is from the same field of endeavor, regardless of the problem addressed and, (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor was involved. *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004). Emcon argues that Hester constitutes non-analogous art and thus is irrelevant because it is neither within the field of the inventor’s endeavor nor reasonably pertinent to the problem with which the inventor was concerned.

Hester discloses a plastic valve and is apparently not in the technical field of exhaust pipe valves which operate in an environment of extremely high temperature. However, Emcon fails to present reasoning to support the assertion that the disclosure of Hester is not reasonably pertinent to the problem with which the inventor was concerned. A conclusory statement to that effect is unpersuasive, and mere argument of counsel does not take the place of evidence lacking in the record. *Meitzner v. Mindick*, 549 F.2d at 782. It simply cannot be assumed that everything about the configuration of a plastic valve is not pertinent to the problem with which Emcon’s inventor was concerned. Emcon has not established that Hester is non-analogous art.

In any event, even assuming that Hester is non-analogous art, as discussed below the limitation in dispute is already disclosed by Thauer as modified by Kuramoto. Hester is not necessary for the rejection.

The limitation at issue is the requirement that the primary sealing engagement between the sealing surface on the shoulder of the valve spindle and the bearing surface on the first end face of the bearing sleeve be within the housing bore within which the bearing sleeve is mounted. The sole Figure of Thauer is again reproduced below which shows a cross-sectional view of Thauer's valve:



The modification of Thauer in light of Kuramoto only eliminates the enlarged flange 4 and does not change the configuration at the top end of bearing 3. At the top end face of bearing 3 is a conical bearing surface 10 which engages the conical sealing surface 9 on shoulder 8 of the spindle shaft 5. It cannot be reasonably disputed that the sealing engagement between the two conical surfaces 9 and 10 is within the housing bore provided for the bearing 3. Thus, Hester is not necessary for the obviousness rejection.

Emcon does not separately argue the merits of claim 30 from that claim 29.

We affirm the rejection of claims 29 and 30 under 35 U.S.C. § 103 as unpatentable over Thauer, Kuramoto, and Hester.

CONCLUSION

The rejection of claims 1, 5, 9, 11-17, 26-29, 31, and 32 under 35 U.S.C. § 102 as anticipated by Cook is *reversed*.

The rejection of claims 11 and 12 under 35 U.S.C. § 103 as unpatentable over Cook is *reversed*.

The rejection of claims 6 and 7 under 35 U.S.C. § 103 as unpatentable over Cook and Fodor is *reversed*.

The rejection of claims 19-22 under 35 U.S.C. § 103 as unpatentable over Cook and Ong is *reversed*.

The rejection of claims 24 and 25 under 35 U.S.C. § 103 as unpatentable over Cook and Bartz is *reversed*.

The rejection of claims 1, 3-5, 11-16, 24-28, and 31-32 under 35 U.S.C. § 103 as unpatentable over Thauer and Kuramoto is *affirmed*.

The rejection of claims 9 and 17 under 35 U.S.C. § 103 as unpatentable over Thauer, Kuramoto, and Cook is *affirmed*.

The rejection of claims 6 and 7 under 35 U.S.C. § 103 as unpatentable over Thauer, Kuramoto, and Fodor is *affirmed*.

The rejection of claims 19-22 under 35 U.S.C. § 103 as unpatentable over Thauer, Kuramoto, and Ong is *affirmed*.

The rejection of claims 29 and 30 under 35 U.S.C. § 103 as unpatentable over Thauer, Kuramoto, and Hester is *affirmed*.

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TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED